THE VETERINARY RECORD

A Weekly Journal for the Profession.

Edited by WILLIAM HUNTING, F.R.C.V.S.

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THE TRANSMISSION OF TUBERCULOSIS.

Professor Koch's latest pronouncement on the transmissibility of bovine tuberculosis to man we have this week reprinted from *The British Medical Journal*. The Professor has not moved from the position he took up at the Congress in London, and it must be admitted he makes out a strong case in support of his conclusions. These, so far as veterinarians are directly concerned, are stated in two paragraphs—"It is the business of agriculture and veterinary science to determine the extent to which tuberculous milk is injurious to cattle and the regulations that ought to be enforced to combat the danger. At the present time there is no ground for making general regulations with regard to the flesh and milk of tuberculous cattle as a means of combating human tuberculosis."

This last statement seems a little too absolute, as Koch has not shown that those experimenters who claim to have transmitted the human disease to bovines are wrong, and the other experiment—from bovine to man—has not yet been scientifically performed. Koch asserts that the transmission of bovine tuberculosis is not proven, and that the cost of regulations to prevent it is money wrongly spent. "It is decidedly better to spend this money in carrying out such measures as will certainly lead to a decline in human tuberculosis."

Professor Koch's position seems little different now from that taken up by Professor McFadyean in 1899. At the meeting of the National Veterinary Association the Professor said—"I think it is exceedingly doubtful whether any cases of pulmonary consumption in man, which is the rampant form of tuberculosis in the human subject, ever originated from bovine tuberculosis, and I think the evidence also justifies the opinion that at the most only a small proportion of the other forms of tuberculosis in man come from either meat or milk." We well remember how this statement was received at the meeting, but it looks as though we shall have to accept it now as literal truth.

THE VICTORIA BENEVOLENT FUND.

The indefatigable treasurer of this fund has succeeded in getting the £500 he set his mind on. More, he has collected over £600, and one cannot but acknowledge that his success speaks well for the good nature of a small and poor profession. To Mr. Barrett our thanks are due for the strenuous personal efforts he made to secure so successful a result.

1903.

We wish all our subscribers a happy and prosperous new year. Those who reciprocate the sentiment may practically ensure it to us by occasionally sending a clinical report of anything they think interesting.

FRACTURE OF FEMUR IN A FOAL.

On August 7th last I was asked to attend a cart foal which the owner said had "put his shoulder out."

On seeing the case I found that there was no displacement, but a great amount of heat and swelling over the whole length of the femur. I could, however, detect no fracture, there was no crepitation or abnormal movement of the limb. I suspected partial fracture or fracture without displacement, gave a doubtful prognosis, ordered antiphlogistic treatment with, as far as possible, absolute quiet, and promised to return on the morrow.

After I had left the owner, not being satisfied with my treatment or being over persuaded by someone else, decided to call in a local bonesetter, so called. This worthy on arriving professed to having no difficulty in diagnosing a dislocation of the elbow joint. He at once proceeded to operate by casting his patient and getting a rope round the fetlock, at which three strong men were ordered to pull, the operator meanwhile manipulating the joint. The result was that something (?) cracked, which the operator said was the bone going into place; the foal was allowed to rise, and, as I was afterwards informed the owner expressed it, he seemed five times worse than ever. The specialist informed them that the animal would be all right on the morrow, pocketed his fee and cleared out.

Late at night I was again asked to visit the farm as the animal was much worse. The particulars I have given above were not then known to me, but on arriving I had no difficulty in diagnosing a complete fracture of the shaft of the femur. I told the owner the case was a hopeless one and advised that it be immediately destroyed. This he declined to agree to, but said he would keep it on and give it a trial. The next day, hearing about the circumstances described above, I retired from the case but asked the owner if, when the animal was destroyed, which I felt sure would have to be done, he would allow me to make a post-mortem. This he readily agreed to do.

About three weeks ago he had the animal shot and I was able to make a post-mortem. The accompanying photographs of the bone taken from both sides show the result.

There had been complete fracture of the shaft of the femur, which had united but which was very much shorter than its fellow, causing constant lameness.

My idea is that there was at first a partial fracture, which may have united had it been allowed to do so, that the traction applied to the limb caused the partial fracture to become complete, and that the

crack that was heard was the bone breaking apart. The case appeared to me to be one which ought to be taken up by the R.S.P.C.A., but their inspectors are, as a rule, too busy looking up slight cases of sore shoulder or saddle gall etc. to be able to spare time to investigate gross cases of cruelty, and the manner in which they often treat members of our profession does not encourage one to try to put cases in their way, but rather to endeavour to give them as wide a berth as possible.

I think, however, that a short description of this case may interest some of your readers.

ALFRED MARSTON, M.R.C.V.S.

Dec. 15th, 1902.

HORNY TUMOUR IN THE SKIN OF A COW.

By J. BEE, Final Years' Student, New Veterinary College, Edinburgh.

The following abnormal condition of the skin of a cross-bred cow may be of interest to you and your readers, especially when accompanied by the photograph of the animal. Not having come across it before I thought it worthy of sending to you.

The cow, an aged cross-bred animal, is the property of a dairyman in Midlothian, and in excellent condition. Situated on each side of the animal's back and about six inches from the middle line appear the horny abnormalities mentioned, which consist of large masses 15 inches long and about nine inches broad and surrounding them are numerous centres of varying size. On the right side the horny tumour is from one inch to about three inches in height, and on the left side the horny tumour will vary from half an inch up to three and half inches in height.

The horny growth is shelly in appearance and resembles roughly broken shale, and can be picked off with a knife after a months' growth, but earlier removal means the evidence of vascular nutrition, and where the growth has fallen or been knocked off a small thickened portion of skin which resembles the shape of the horny part is left.

Histologically it is difficult to cut a thin section as the tumour is very brittle, but when softened and stained with picro-carmine the structure, which resembles the horny wall of the foot, is seen, but the horn tubules are very irregular.

I enclose a section of the tumour for your personal inspection.

DEXTER MONSTROSITIES.

F. D. MCLAREN, F.R.C.V.S., Beverley.

Within the last six years I have been in attendance on ten cases of abortion in a small herd of Dexter cattle near here.

I was asked to come to the first case with all despatch as the cow "had been fetched in from the park where it had calved, and was straining its inside out."

On arrival I found some small bowels protruding from the vulva, but knowing from their calibre etc. that they could only be fœtal, I explored and discovered a fœtus. I got hold of a foot and attached a cord, but a moderate pull brought off a foot, and the other foot came off in the same manner, but on getting a cord round the neck I succeeded in dragging away what we, in common with Mr. Scott's client, designated a "bulldog" in a rather decomposed condition. The reason the cow was supposed to have calved was that she had been observed to be very big in the body for some time and had very suddenly collapsed.

The next case was a breech presentation, and after affixing cords to the hind legs and with moderate traction getting the fœtus well forward, the legs coming off, however, in the process, I succeeded in threading several small cords in the skin in various places, putting fresh ones in if they dragged out, and getting away in that manner another "bulldog." Each fœtus was like those so graphically described by Mr. Scott, resembling an old bulldog, with prominent eyes and protruding lower jaw, and very fair feet, but no legs to speak of, with the skin not thoroughly covering the body, and more or less of the internals squeezed out.

In every case I removed the placenta and irrigated the uterus with creolin solution every day for some time, and then less often. Creolin solution was also liberally used throughout the byres, and the placenta etc. buried. Since then some of these cows have borne healthy calves, which have lived. Others have been fattened and marketed. The owner has been well repaid the expense of the antiseptic treatment.

The contribution *re* the above in this week's issue by Mr. R. A. Stock, F.R.C.V.S, recalls to my mind an exactly similar occurrence in my practice in April, 1895.

I received a message to go and deliver a little black Dexter-Kerry cow, 3 years old, one of a herd of twelve belonging to a gentleman much interested in the breed. I found her well relaxed, with the buttocks and tail of the fœtus presented. Continuing my examination I was astonished to find that in lieu of hind legs proper, the fœtus had only two rudimentary appendages hanging loosely, while what could be felt of its body resembled a well filled sausage, too large and non-resisting for even well developed pains to fix it in the pelvic cavity. A coil of fœtal intestine about 2 yards long was lying in the womb, having escaped through a circular opening at the umbilicus about 1½ inches in diameter. I am certain that if she had been allowed to labour on for some time longer unaided there would have been produced in this case also the complete picture as described by Mr. Stock of a cow standing with bowels protruding from the vagina. By the aid of a cane with a strong crook handle which I inserted into the umbilical opening I soon delivered a monstrosity with head, body, and legs as described by Mr. Stock. It was perfectly fresh and may have been living when labour began. Its resemblance to a bull-dog was very marked, but in many points its appearance was very suggestive of a seal.

I have never again met with a similar case, nor indeed heard of one till I read this week's *Record*, but it would seem that this monstrosity is somewhat

HORNY TUMOURS IN A COW.
To illustrate Mr. Bee's case.

FRACTURE OF FEMUR IN A FOAL.
To illustrate Mr. Marston's case.

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common and probably peculiar to this interesting breed of cows. My patient, however, was a Dexter-Kerry, and if it be the case that the pure Dexter is more afflicted with these monsters than a cross breed the rarity of cases in my client's herd is explained.

I attributed the mal-development of the calf to probable in-breeding, but, like Mr. Stock, I would be much interested in anything that any veterinary surgeon with good practical experience of Dexters had to say about singular freaks of nature.

HUGH BEGG, M.R.C.V.S.

East Kilbride, N.B.

NEW SUTURE THIMBLE.

I think there will be general agreement that there is no suture needle holder to be compared with the human finger and thumb, for being handy and reliable in holding and directing the needle in the required direction. Also, beyond compare in regard to leaving hold quickly and thus leaving the needle *in situ* when the animal kicks.

The only thing there has ever been any need for is a thimble or something of that sort, to enable the operator to give a quick decided push, with sufficient force, to insure the needle being sent through at once, and thus save pain and irritation to the animal, and give little or no cause for him to rebel or kick at the operator. Over six years ago, I had a thimble made, locally, which I have used regularly ever since, and which has always given me great satisfaction in using. If tried, I am sure it will be approved of.

I have authorised Messrs. Arnold & Sons, London, to have it produced for sale.

JOHN CAMERON, V.S.

Berwick-on-Tweed.

VETERINARY MEDICAL ASSOCIATION. OF IRELAND.

The November meeting and annual supper took place at the Gresham Hotel, Dublin, on Thursday, November 27th. The following members were present: Charles Allen, president, Professor Mettam, Messrs. W. H. Wilkinson, L. M Magee, J. D. Richardson, W. Russell, E. C. Winter, J. H. Carr, P. J. Howard, J. V. Daly, F. Kerr, M. Hedley, Vet.-Col. R. Pringle, J. J. Kelly, W. Cargill-Patrick, and J. McKenny.

Also the following visitors: Messrs. G. W. Tyson, F. C. Ryan.

The following gentlemen were ballotted for and duly elected members: Messrs. W. H. Bradley, Dublin; W. S. King, Dublin; and W. H. Harvey, Tullamore.

Messrs. L. M. Magee and W. Russell were elected auditors.

In the report of Council the following points were dealt with:

"As instructed at the last general meeting, held at the Royal Veterinary College on August 26th, the Secretary on September 5th sent to the Secretary of State for War the letter approved of relative to the Army Veterinary Department; and on October 24th received an acknowledgment from Vet.-Col. H. Thomson, C.B., Director-General A.V.D., of its receipt; and again on November 14th, received an acknowledgement from Lieut.-General Sir H. M. Clarke, Quarter-Master General."

"Your Council, as you instructed, have had under their consideration the subject of the exemption of veterinary surgeons as jurymen, and as a preliminary a circular letter was issued to the members of the profession residing in Ireland, with the result that 26 have stated they are not called on to serve, although most of them have been many years in practice for periods ranging from five to twenty years: seven were compelled to serve on juries, and all who hold official appointments under the Contagious Diseases Act are exempt."

"The Council have also had under consideration the question of the National Hunt Steeplechase Committee, and the National Hunt Club, appointing a local veterinary surgeon to attend at each race meeting; also to supply an ambulance waggon in case of accidents. On November 5th the Secretary, as instructed, wrote to Mr. Thomas Brindley asking him to bring the matter before the two committees; this letter was acknowledged on November 7th, and on November 19th a letter was received from Mr. Brindley in which he stated that the letter of November 5th will be brought before the general meeting of the committee of the Irish National Hunt Steeplechase the first week in January, 1903."

Mr. J. H. CARR read an announcement which appeared in *The Field*, purporting to have been sent to the paper by the Secretary of the Royal Veterinary College, Camden Town. The matter was referred to the Executive Council.

SPECIMENS.

Prof. METTAM, in submitting a specimen of tuberculosis from a horse, explained that Mr. Freeman—whose case it was—was unable to be present and so he would relate to the Association the history of the animal. The horse belonged to a gentleman in the city and Mr. Freeman had it in his observation for some time past. Four or five years ago he had been called in to see the animal, he was ill and the diagnosis was that he was suffering from bilious influenza, which was rife in the city at that time. The animal recovered, and did well for another couple of years. It had another attack of influenza from which it also recovered. About six weeks ago he was observed not to be doing well, no treatment seemed to do it any good. Mr. Freeman examined and found an affection of the lungs, although he was not prepared to say exactly what was wrong, but the animal still continued to lose condition until it became practically a living skeleton, and it took him all his time to walk to the knackers. Mr. Freeman, knowing it was to be slaughtered, went to see the post-mortem examination, and he brought him (Prof. Mettam) the specimen shown. It had the appearance of brawn, was quite solid to the touch, and apparently to a great extent airless. He made scrapings of the lung and examined them after staining and found that they were remarkably deficient in bacilli. (He would recall the fact that last August he had submitted a specimen wherein the bacilli was so extremely numerous). In the case of lung lesions in the horse three main conditions are recognised. The first is when acute miliary tubercles are disseminated throughout the whole of the lung; the second lesion, the last specimen they had—of a cart horse—when the lesions were like to sarcomatous tumours, and were relatively so few that one might almost count them; and then there was the condition which is described as being more like a caseous pneumonia. He thought it was a remarkable fact that one of their professional brethren in Dublin should have come across two cases of tuberculous horses, more especially as the available statistics put the proportion of horses suffering from tuberculosis as 1 in 1,000 to 1 in 10,000.

He had also a piece of liver of the same animal. They might see quite readily the tubercles showing through the covering. He had not been able to examine the specimen microscopically, but they could see a good many showing through the serous membrane.

He showed the spleen of the same animal and it was studded throughout with tubercles of varying size. He would direct attention to the condition of the lymphatic glands along the upper border where the gastro-splenic ligament was attached, there they were enormously increased in size. He had seen other cases of tubercle of the spleen of the horse—it is a fairly common lesion—where the tubercles were very much larger than those now shown; indeed it was not an uncommon thing to find tubercles in the spleen of a horse as large as an orange, or even larger.

In order to show the likeness of the lesions exhibited in the case of other animals than the horse, he presented a specimen of the spleen of a pig showing tuberculosis. (That had come into his possession through the kindness of Mr. Hedley). They would see that it was practically a miniature of the spleen of this horse as regards the lesions presented.

He thought it would be a very interesting problem for the Association to discuss the etiology of that affection in the horse; how did the horse get the tuberculosis; and what was the probable source of the infection?

Mr. WINTER would like to ask whether that was a very old horse and whether he was stabled by himself or with cattle? Was the history known of the people who lived with him. Were there any tuberculous attendants about him? Was he a poor man's horse, or belonging to a well-to-do owner?

Prof. METTAM believed he was the only horse kept by the person owning him, who was a well to do man occupying a high position in law but he was not prepared to give his name. He did not know how long he had him. He was about 10 years old when he died. He thought Mr. Freeman had him in his view since he was purchased for the gentleman in whose possession he was when he died. He had been six years in his possession. He had been showing symptoms of ill health for about six months—as far as Mr. Freeman could go back, particularly in his history. He was not stabled with cattle. Replying further to Mr. Winter he explained that he did not know whether at the time of the illness he had any milk with his food; he should like to have information on that point, as it might suggest the source of infection—especially as in the case of a horse it would not be boiled, as was pointed out.

Mr. HEDLEY thought that the history of the case detailed by Prof. Mettam would indicate that there was no source of infection except that coming through tuberculous milk. If such milk were given at the time the animal was in a low state of health suffering from influenza the infection would be less easily combated than at any other time.

Mr. WINTER said there was an interesting point that might require to be settled supposing the case were to be viewed in its legal aspect, and that was in or about how long was it considered that the lesions would take to develop?

Prof. METTAM thought it should be a matter of twelve months at least. However, it must be borne in mind that it was a very difficult question to reply to, as animals differed so much among themselves, some developing the lesions rapidly and some slowly. It depended largely on the condition of the animal's tissues reacting to the virus.

Mr. CARGILL PATRICK inquired whether the period of ill health was immediately succeeding the last attack of influenza.

Prof. METTAM said not. The last attack was something like two or three years previously.

Mr. CARR asked if Mr. Freeman applied the tuberculin test in this case.

Prof. METTAM did not think so; and replying to Mr. Howard said that the test created almost similar symptoms in horses as in cattle or other animals. A more violent reaction, however, took place in the case of its application to man. Of course, as they knew, in the case of the guinea pig the application may bring about recovery. It was based on that fact that Koch made his statement in the year 1890 that he had found a cure for tuberculosis.

Mr. MCKENNY wished to know if he was to understand that in the case before them the bacilli were very few in number, and if so was the rest fibrous matter?

Prof. METTAM said it did not follow that because there were few bacilli that the animal was not highly infected, because they knew for a fact that material which came from a tuberculous source in which there were no demonstrable tubercle bacilli may be highly infective, and it showed that they did not yet fully know the life history of the bacillus in question—as he mentioned to the Association last August. They were not quite satisfied as to whether the tubercle bacilli spores or not.

Mr. MCKENNY thought the point was very interesting, inasmuch as the disease is said to be due to a microbe, and here they found that there was something else and not a microbe. He thought it went to show that although it was said to be of a certain type that is due to a certain bacillus, yet in reality the bacteria played a very secondary part. They did not require them at all, there was something behind the scenes. He was strongly of opinion—and he expressed it every time he could—that they were only in their infancy as far as that question was concerned. He thought there was a poison in the system, and that the micro-organism was only a symptom and a medium whereby the poison was conveyed from diseased to healthy animals.

Mr. CARR said that Mr. Hedley had remarked that it would be just as virulent. If they could not find the bacillus what proof was there that it existed at all? They could have tissues caseating without the aid of the tubercle bacilli.

Prof. METTAM explained that the presence of the bacilli could be demonstrated by inoculating a healthy animal and killing it by tuberculosis. Take a sound guinea pig and inoculate with material in which you could not demonstrate the presence of the bacillus, and the animal may die as the result of tuberculosis. However, it need not necessarily prove that something more virulent is not there. In anthrax the spores are not demonstrable unless after a very prolonged and very intricate method of staining.

Mr. MAGEE thought that Mr. Hedley's suggestion that the horse might have become infected through the medium of milk was a very likely one. He would imagine that a horse suffering from influenza at a time when the natural defences of the body are much weakened would be very prone to develop tuberculosis if subjected to any infection through a medium such as milk. Mr. Winter had suggested that as the lungs were highly infected, and the intestines were not, it would be hardly likely that the infection had come about through diseased milk. He, however, did not think that that view would hold, as it did not follow that the intestines should become diseased. Professor Mettam had referred some time ago to an experiment performed by Professor Nocard in connection with glanders. Food in which was mixed glanderous material had been given to perfectly healthy horses, and within five or six days the animal developed glanderous ulcers on the Schneiderian membrane, but he thought the intestines were not affected. It only showed that that membrane was one of the predilection seats of the disease. As in the case of the animal under discussion the lungs may have been the

predilection seat of the disease, although the infection entered through the intestines.

Mr. McKENNY fully agreed with Mr. Magee's theory, although it was contrary to that propounded by all the very learned men at the British Congress on Tuberculosis held last year in London. It there had been laid down and accepted as correct, and also expressed by the written opinions given in professional journals, that children who suffered from intestinal tuberculosis contracted the disease per ingesta, and those whose lungs were the primary seat of the disease had contracted it per inhalation ; whereas he (Mr. McKenny) considered it more probable that it did not matter what channel the disease was introduced into the system the parts affected would be those which at the time were most delicate and suitable for the development of the tubercle.

Mr. ALLEN would like to ask Prof. Mettam if tuberculin was a certain test for tuberculosis.

Prof. METTAM thought in 95 per cent. of cases you got a reaction, and he believed it was a very valuable thing in practice.

SPECIMEN OF NODULAR DISEASE DUE TO ŒSOPHAGOSTOMA COLUMBIANUM.

(By Mr. HEDLEY.)

One of the specimens which I desire to bring under your notice this evening is an instance of nodular disease in the intestines of a sheep due to the presence of a nematode parasite, *Œsophagostoma Columbianum*.

A pretty full account of the life history, the changes, the diagnosis, and the injury done by this parasite is detailed with great care by Mr. Curtis in a monograph on the subject of "Nodular Disease of the Intestines," which appears in one of the publications of the United States Department of Agriculture, and relating to animal Parasites of sheep.

It appears from this that when the condition was first observed it was believed to be due to tuberculosis, but careful examination failed to isolate the tubercle *bacilli*. the appearance of little nodes, or nodules, on the surface of the intestine is well marked on the specimen to which I ask your attention, and which was obtained through the kindness of the late Professor Duguid from certain United States sheep which were landed several years ago at Glasgow, and eventually slaughtered at Paisley.

This nodular condition : the appearance of the parasite, and other points of deep interest connected therewith are shown in the various plates which I now have pleasure in placing before you.

The diagnosis of the disease is attended with great difficulty, but is much assisted by (1) a knowledge of the history of the fields on which the affected sheep are grazing ; (2) a post examination examination of one of those suspected to be affected.

The treatment is also a question for consideration, because at present there does not appear to be any known remedy, but it is suggested that anthelmintics generally might be of service. The chief difficulty, especially where the flock is large, is that which requires all affected sheep to be individually dosed. As to prevention—the abundant use of salt is indicated because the ova of the parasites are deposited with the fæces on the ground, there undergo necessary changes, and if uninterfered with live to be taken up with food or water into the alimentary tract of the sheep. Salt destroys these, as it does most other similar nematodes.

I may at the same time say that, so far as we are aware, the disease illustrated is entirely unknown in Ireland ; and seeing that foreign animals cannot be landed alive in this country there appears to be little chance of the disease approaching our shores ; but as this is a pathological specimen presenting a certain amount of interest I thought it desirable to bring it under your notice.

SPECIMEN OF PITTED INTESTINE THE RESULT OF SWINE FEVER.

In dealing with swine fever it is a matter of considerable interest to endeavour to arrive at some conclusion as to whether a pig has ever been affected with the disease, because when the Department of Agriculture has caused the slaughter of swine, and the life history of those on the premises is being considered, it may sometimes happen that an animal that has been least suspected may have been the means of introducing the disease.

As you are probably well aware, swine fever appears in two distinct forms—the diphtheritic and the ulcerative. It matters not which—if the pig recovers the intestines always reveal the marked ravages of the disease. The specimen I now present is one showing the pitting due to the ulcerative process. The depth of the pitting has been decreased owing to the use of a too strong solution of formalin ; prior to this it had been very much more clearly marked.

There are conditions in medical practice which are known as "pitting," and which are due to a certain disorganisation of the skin—as in small-pox, syphilis, and lupus—where the papillary portion of the integument has been entirely absorbed. In the case of the intestine of the pig the internal lining of the *lumen* of the gut has undergone absorption where the ulcerative or diphtheritic changes had taken place as the result of the ravages of swine fever.

It is not at all an uncommon circumstance in making a careful post-mortem examination of swine slaughtered as connected with an outbreak of this disease to find pittings of varying depths, ulcerations of varying ages, and also an inflammatory stage in certain of the most recently attacked cases.

Mr. HEDLEY explained that he had endeavoured to find the parasite (in the case of the nodular disease presented), but had entirely failed both on section and also by scraping from the contents between the nodes.

Mr. McKENNY would like to ask if the disease described was fatal.

Mr. HEDLEY said yes, generally. The sheep that becomes the subject of *Œsophagostoma Columbianum* very rarely recovers, but of course it greatly depended on the extent of the disease. If the animal is only slightly affected it will linger on for a long period, but it can never be made much of. If it is badly affected (as in the case of the specimen) it very soon reduces to a skeleton, and all the time it is merely laying down fresh sources of danger for succeeding flocks. It is therefore a very objectionable animal from every point of view. They could very well understand that the condition shown looked very like tuberculosis.

Prof. METTAM thought the Association should be very much indebted to Mr. Hedley for that very fine specimen of the *Œsophagostoma*. He would like to mention that there is another disease of the intestines of sheep which might be taken for the same lesion, and which is caused by a coccidium. The latter, however, more especially affects the small intestines : whereas, Mr. Hedley said that the lesion he showed was in the large intestines. One found very frequently in the cæcum of the horse a similar lesion due to the *Strongylus Tetracanthus* or *Strongylus Armatus*—where it is not a very difficult matter to squeeze the parasite out of it. He would like to ask (as regards the swine fever specimen) if the pitting of the mucous membrane shown was due to the organism of swine fever or was it a secondary lesion ?

Mr. HEDLEY said it was a secondary lesion due to the inflammatory action set up owing to the presence of the organism.

Prof. METTAM explained that the reason for asking was that practically every investigator has identified his

own swine fever micro-organism which he was prepared to swear was the origin of the disease. He was inclined to think that Professor M'Fadyean had got nearer the causal agent than anyone who had yet studied the question.

Mr. WINTER submitted several very interesting specimens as follows :

(1) Piece of bone removed from the occipital region along with about twenty smaller pieces, formed portion of the attachment of the *ligamentum nuchæ*. The subject was a thoroughbred three-year-old gelding that reared up and fell back fracturing the bone and producing concussion. Patient discharged cured in six weeks.

(2) Portion of pedal bone removed from bad case of quittor of long standing. Recovery in six weeks, uneventful.

(3) Photograph of legs of a half-bred three-year-old gelding sent to the kennels to be destroyed. Subject was foaled, as shown, with knees crossing and legs turned out.

(4) Necrosis of pedal and navicular bone in a cart horse.

(5) Intestinal *calculi*.

(6) Portions of inferior maxillæ removed from a thoroughbred brood mare along with a tumour the size of a large cocoanut—evidently carcinomatous.

(7) Portion of nasal inferior maxillary bone of horse showing result of necrosis.

(8) Section of foot showing result of quittor and laminitis.

(9) Canon bone of thoroughbred horse shewing process of repair after fracture and subsequent amputation.

These specimens, photographs, etc., gave rise to very considerable discussion, Mr. Winter supplied particulars as to the history of the several cases shown.

FRACTURED PELVIS.

Mr. MCKENNY : Mr. Chairman and Gentlemen,—The fractured pelvis which I submit for your consideration is to me one of uncommon occurrence, and the history of the case is of much interest. The pelvis is fractured on the off side in two places, one anterior and the other posterior to the acetabulum ; they are surrounded with ossific deposits which do not seem to have grown from the bone as an ordinary callus of fracture, and thus the fracture has not been properly united. However, it is evident the fracture is of old standiug. Now here on the other side of the pelvis are other fractures in similar positions The superior angle of the ilium is also fractured ; the three latter are recent as shown by their sharp edges.

The history of the case is as follows. On May 27th last a bay gelding, eight years old, was brought to my infirmary for advice relative to an enlargement which had developed during the previous night on the off hind quarter ; it extended the entire length of the femur, its greatest thickness being in the centre and its termination well defined, circumscribed, with rounded edges, in fact it had the appearance of a tumour with a broad base ; it felt solid and did not seem to cause pain even on pressure, manipulating the leg in various directions, or when walked. The animal, however, moved sideways, the near hind foot coming into the position the off hind foot should occupy if it walked straight. The horse otherwise seemed well, ate heartily, but did not lie down. I felt no crepitus, and as I was informed that the animal had not to the knowledge of anyone met with an accident, I formed the opinion that the horse in getting up in the stable slipped and injured the muscles, and probably ruptured a blood vessel, but that it was quite possible there was also a fracture. I ordered the horse to be prepared for and be given a dose of physic, and to be placed in a stable with head racked up so that he could not lie down ; the swollen part to be well fomented with warm water, and gave a cooling lotion to be applied.

On June 2nd, seven days afterwards, the animal was again brought to me ; the swelling had greatly diminished at its lower surface, but increased superiorly. The animal was lamer, but walked fairly well without blowing or exhibiting much pain. However, on examing per rectum I discovered the fracture on the off side of the pubis, and treated the animal for same, put on a charge, and packed the horse in a stall so as to keep him in a fixed position. In these cases I do not care to sling a horse as I find each time the animal sits on the breeching the femur is moved, and consequently the fracture is not left quiescent.

On June 11th the horse was taken out of the packing and put into a loose box, but it did not lie down until July 2nd ; it was then walking almost sound.

On July 10th it was put out to grass and did well until July 25th when it was noticed to be lamer than ever, so it was again brought to me. I found a large bony deposit on the off side of the floor of the pelvis situated where the fracture was, but I did not detect any crepitus although I had the leg roughly pulled backwards and forwards, and in and out ; the swelling had completely disappeared except over the immediate seat of fracture, this was hot, and on being pressed the animal evinced pain.

I had the parts blistered, and the animal was again sent to grass on August 3rd (10 days afterwards), and remained there until September 12th when it was placed in the stable for a week, and afterwards put to light work. I may here mention that the gluteus muscles on the off side were much atrophied, and there was an enlargement over the head of the femur which gave the hind quarters a very uneven appearance.

The horse worked well until October 1st (nearly three weeks), it then seemed unable to trot as fast as it had done, and remained in this state for a week ; then when at work one day it suddenly stopped and seemed to be suffering from colic ; it was at once unyoked, but before the harness could be taken off it fell or threw itself down on the off side. This occurred in a street on the tram lines, and as the animal could not get up it was partly dragged off and then turned over ; it then with some difficulty got up, and walked fairly well to the stable, a distance of three-quarters of a mile, and did not blow, sweat, or seem in much pain, on the contrary it ate well. I received a telephone message from the owner in which he stated that the animal was not going on satisfactorily, he thought it was suffering from indigestion, it had to be unyoked in the street as it seemed to have had a slight attack of colic. I at once attended, and found the animal eating hay quietly ; but on my causing it to move, the near hind leg could only be brought forward slowly, but apparently without pain, and he could stand and walk on it ; however, on attempting to turn the animal on that side, the supporting power of the leg was suspended ; this led me to examine for a fracture, which there was no difficulty in finding, and the owner consented to have the horse at once destroyed. This was accordingly done, revealing the fractures which I now present for your inspection. I may mention that the animal while under treatment remained in good con dition.

I now submit for your consideration :—

(1) The unusual absence of pain in this case of fracture, and trivial lameness contrasted with that usually exhibited in similar cases.

(2) Did the fractures on the near side of the pelvis occur at the time that the horse fell on the off side, or was it due to the animal being turned over and the hind legs used as levers ?

(3) What feasible reasons can be given for either

Obstetric Instruments.

Mr. Chairman and gentlemen,—The two obstetric instruments which I have the pleasure of submitting for your consideration will, I hope, not only meet with your approval but, when put to a practical test, be appreciated. They are simple in construction, easily used, and most effective in practice. They afford the operator facilities which will enable him to readily accomplish tasks otherwise most difficult, or even hitherto considered impossible to perform.

The first instrument consists of a strong steel rod having at one end a guarded pulley, and at the other end a movable cross handle-bar. The instrument is specially curved between the ends to meet requirements. The objects in using the instrument are to push forward, upward, or downward any portion of the fœtus which may be found necessary. For example take the case of a breech presentation where the hind legs of the fœtus are down; the mare or cow being in a standing position, we attach a rope to one of the hind legs of the fœtus above the hock in the usual manner. Now, under ordinary circumstances, when we pull the rope, the body of the fœtus being stationary, with the stifle the first movable portion of the ridged bony structure, from a mechanical point of view the hock must be forced backwards and the leg drawn upwards when the rope is pulled outwards; consequently the hock is brought under the pelvis, and thus the exertion of further force in this direction is not only futile but contra-indicated, as it is obvious the hock must first be brought forward before proceeding to bring the foot into a suitable position for safe removal. Those of us who have experienced this difficulty will doubtless hail with delight a device which will save us from being both physically and mentally overtaxed (unfortunately the latter is the exception and not the rule with the majority of difficult parturition cases). It is at this stage that I consider my instrument comes to the rescue. The loose end of the rope which has been attached to the leg of the fœtus is passed over the wheel of the instrument and retained in the hand of an assistant, while the operator passes his hand into the desired position and guides the wheeled end of the instrument into the desired situation, so that when the cross handle bar is held firmly by the assistant, and the loose end of rope pulled, the leg will be drawn forwards and upwards, thereby bringing the hock from underneath the pelvis and placing the foot in such a position that it can be readily grasped and taken out without injuring the fœtus or dam. The bent portion of the instrument is curved in such a manuer that the hips of the fœtus can fit into it, and thus permit the wheeled end of the instrument to lie flat on the ribs, and indeed assists in retaining the instrument in its proper position. The instrument can be applied to near or off side as may be necessary. When desirable, it is possible to move the cross handle bar so that its great leverage power can be applied in retaining the instrument in any desired situation.

The second device consists of a flat piece of steel, six inches long I find the most convenient length, having a hole at one end sufficiently large to allow the forefinger to pass into it, and at the other end a small hole for the reception of a strong piece of cord. The flat side of the instrument is curved. It is very useful in many cases; for instance, say the fœtus is coming with the neck turned backwards, and the head lying on the ribs with the nose pointing to the dam's sternum; no doubt most of you have experienced the difficulty of getting a rope around the neck, as in this position it lies tightly pressed against the shoulder. However, with this simple invention the difficulty is almost completely removed. It is applied as follows. Attach in the small hole an ordinary piece of strong cord, and take the instrument in your hand with the large hole near the top of the fingers, and the convex side of curve lying on the hand with the thumb on the concavity; in this position pass the instrument in until the neck is reached, and then remove the thumb so that the concave side of the instrument lies on the neck and the shoulder, then by moving your hand to the other side of the neck, no difficulty will be found in placing one of the fingers in the large hole of the instrument and withdrawing it with one end of the cord attached; the eyelet of the parturition rope can thereby be drawn in and secured. Of course a leg can be secured in a similar manner.

Mr. Hedley gave notice that he would propose an alteration in rule 8 (of the Association rules) which would have the effect of debarring any members whose subscriptions had not been paid from the privilege of voting at election for officers. He thought it would be the means of securing the more prompt payment of subscriptions.

Mr. Cargill-Patrick proposed a hearty vote of thanks to the members who had been kind enough to collect and submit the specimens for discussion.

Mr. J. V. Daly seconded the vote which was passed with acclamation. He thought the specimens and discussion were very interesting and instructive—especially those bearing on tuberculosis.

Prof. Mettam proposed, and Mr. Kerr seconded, a vote of thanks to the Chairman who suitably replied, and the members adjourned for supper.

SOUTHERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

(Continued from p. 409)

CLINICAL NOTES.

By Mr. A. C. Wild.

Mr. Wild suggested that the cases to which he intended to refer should be discussed separately, and the Chairman thought this was an excellent idea.

Mr. President and gentlemen,—I have selected a clinical paper to read before you for several reasons, first, because I hope to myself gain much instruction from your discussing the cases; secondly, I think more practical information is to be gathered from a clinical paper than one dealing with one special disease the substance of which must of necessity be more or less of a paraphrase from existing literature on the subject. I feel some difficulty in selecting my cases as it is not my object to bring before your notice cases which might be described as clinical or pathological curiosities only met with perhaps once or twice in a life time, for however interesting these might prove, it would not pave the way for a discussion we all hoped to learn something from.

The first case I shall bring before your notice is one of invagination of the cæcum, the second a case of thoracic and abdominal disease, interesting as illustrating how the abdominal pain masked the extensive thoracic trouble; the third, fracture of the pyrasindal process of pedal bone not diagnosed until a long time after the injury. Also two cases of hæmoglobinuria, the first has been published, and I shall only outline the case that I may contrast it with the second, because the first case was the most severe and ended with complete recovery; the second was a much less severe form of the disease in which the animal was ultimately destroyed as useless. I have also a case of pyæmia following injury to the knee that I should like to bring before your notice.

Invagination of the Cæcum.

A well bred, 3 year old, chestnut mare, with foal. I was consulted about the foal, which when first seen was

three days old and scouring. The mare was evidently not in good health. She gave very little milk, was fickle in her appetite, had a week pulse, and walked with a sort of straddle in her hind legs. Her temperature was between 102° and 103°.

Her foal was removed, and an attempt made to bring it up by hand, but it died when five days old.

Seven days after foaling the mare had a rather severe attack of abdominal pain lasting several hours, was treated with sedatives (opium and chloral) and fomentations to the belly. She recovered and went on fairly well for two days and then was seized with another attack of abdominal pain. The pain seemed continuous and at times acute. She frequently stretched as if trying to drag up something in her loins. I told the owner I thought there was strangulation of the small intestines, although the pain was not so acute as is usually seen in twist of the small gut. Her pulse kept up and she only sweated slightly.

The mare was allowed to live until 9 o'clock (having been in continuous pain for 8 hours) when, as I thought the case hopeless, we decided to shoot her. When brought out she walked strong with a very marked straddle and neighed loudly in answer to some other horses.

Post mortem made at once. Abdomen only examined with the following result. On opening the cavity about a pint of blood-stained fluid escaped. A few blood patches on the mesentery with some enlarged mesenteric glands. There was nothing else to be seen at first sight. I then went over the intestines and missed the cæcum. I slit open the large colon and found the whole of the cæcum invaginated lying in that gut.

I think this is a case we can ponder over, and I should presently like to hear your opinion as to whether you think the cæcum commenced to slip into the colon at the first seizure, and righted itself, subsequently to slip completely in at the secondly attack; likewise to have your opinion as to how the cæcum passes into the colon. Does it do this bit by bit or as it were in one effort? Also was there any connection between the straddling gait and the invagination?

Personally, this is the first case of the kind I have had the opportunity of watching. I can call to mind seeing at least two other specimens laying in the post-mortem house of the College, but I never heard the full history of these cases any more than that the animals had died from colic, and this was the result of the post-mortem.

Mr. J. A. Todd said he certainly thought the straddling gait was owing to the mare's condition.

Mr. H. L. Roberts asked if the mare balanced herself on her back with the four limbs in the air.

Mr. Wild said she did not. She got up and laid down again rather carefully, and every now and then tried to turn over, but she did not try to get into any particular position.

Mr. Roberts said that one writer seemed to think that rolling over on the back seemed to give relief to an animal suffering from abdominal pain which no other position would give.

Mr. Wild said that with the exception of the peculiar straddle there were no other symptoms which they did not usually find in a case of twist of the small intestines. He should like to hear the opinion of the meeting as to whether the straddle had anything to do with the invagination of the cæcum.

Mr. F. Spencer said that about eighteen months ago he had a case of a four year old mare. He was fetched about nine o'clock at night, and found the animal restless with pain and the pulse about 60. He stayed with her about two hours, the pulse rising and falling susceptibly and she had short breath. The next morning at seven o'clock he found her stradding and in a profuse perspiration. She always lay down on her right side. She lived until about twelve o'clock. At the post-mortem there was no cæcum to be found—it was absolutely lost.

In answer to Mr. Caudwell, Mr. Wild said he found no enteritis or anything of that sort. There was nothing abnormal about the parts. He found no blood mixed with the fæces.

Mr. Caudweel expressed the opinion that the displacement occurred at the first seizure. Such cases were more rapidly fatal with animals than with human beings.

The Chairman: Query.

Mr. Wild said this animal would no doubt have lived twelve hours longer if she had not been destroyed. In answer to the Chairman he said her temperature never rose above 103½. The first time it was taken it was between 102 and 103. Then she fed a little, and after getting over the colic it went down to 101. When the pain recurred it of course went up again.

The Chairman said he was disposed to think that the mischief took place when the symptoms were first noticed. He had never had a similar case, but he had certainly had cases of twist of the bowel that had lived for days. He had previously mentioned a case in which an animal with twist of the bowel had lived for seventeen days, and he saw no reason why an animal should not live for several days with invagination of the cæcum. He certainly should regard the straddling gait as a symptom of the disorder.

Mr. Wild said that as it occurred in the case mentioned by Mr. Spencer he should attach considerable diagnostic importance to it.

Mr. Spencer said the animal he referred to was at work until four o'clock on the day he was called to it. There was very little inflammation to be seen at the post-mortem.

Mr. P. J. Simpson said the straddling gait seemed to be of importance in the diagnosis.

The Chairman: The question is—Are you to take it as a diagnostic symptom of this particular condition? I should say not, because you get a straddling gait in other cases of abdominal disturbance.

Mr. P. J. Simpson said he did not think their patients lasted long as a rule in these cases.

The Chairman: No, not as a rule. I am only speaking of an isolated case.

Mr. Caudwell mentioned a case in which a horse suffering from intussusception of the small bowel had died in a few hours after fearful agony. In that case the small bowel was found telescoped to the extent of six feet. He had never yet met with a case of displacement of the cæcum.

Thoracic and Abdominal Disease.

Subject being a grey pony gelding six years old.

First seen August 22nd. Found pony weak, breathing shallow, pulse wanting in volume, temp. 103½. Refused food, the owner said he seemed ill the day before and he noticed that he was sweating. I diagnosed lung trouble with recent colic. He was given ammonia as a stimulant, well rugged up, stimulating liniment to chest and allowed plenty of air space. On the same night he was seized with acute abdominal pain and when I again saw him the next morning he showed the usual symptoms of colic, constantly up and down, etc. and died early the same evening.

Post-mortem.—On opening the abdomen four hours after death I was surprised to find the colon green and stinking, as if the animal had been dead four days instead of four hours. Omentum of a dirty greyish red colour, peritoneum pink, cæcum adherent to floor of abdomen by an old adhesion. Chest—Lungs adherent to thoracic walls, costal pleura nearly an inch thick in parts. Lungs black with vessels containing black blood clots: pericardium much thickened. I subsequently

found out that the owner 10 days before had driven the pony very fast, so that he was described as being in a muck sweat; and when he got home was turned out in a field without being scraped or any clothing put on. The result of the post-mortem I think you will agree pointed to Septicæmia, the result of a septic pleurisy; but what struck me was the manner in which the usual symptoms of pleuro-pneumonia were masked by the abdominal pain. You will notice the animal was continuously up and down, notwithstanding the condition of the chest and lungs; that the distress which must have attended the chest trouble was not expressed, but as it were overridden by the abdominal pains. I don't think one always realises the acute sufferings of a horse with gripes. For an animal to be continuously up and down with a pleura and lungs in the condition shown by the post-mortem to my mind very conclusively proves that of all painful diseases, abdominal spasm holds the first rank, and I think many animals succumb to the pain alone, as I have frequently made post-mortems of animals dead from gripes without finding any lesions sufficient to account for death.

Mr. F. SPENCER said he agreed with Mr. Wild that on making a post-mortem examination one often did not find enough to account for death in cases of abdominal pain. In several cases he had been quite mystified.

Mr. CAUDWELL remarked that exudation took place rapidly in cases of pleurisy.

Mr. WILD: You would expect it to take a few days to get that thickness. It was quite leathery in parts.

The CHAIRMAN said it was an interesting case. It had occurred to him that the whole of the abdominal trouble might have been secondary to the thoracic.

Mr. WILD said he should like to hear the opinion of those present on that point.

Mr. P. J. SIMPSON: Do you take the view that the bowel trouble was secondary to the thoracic?

Mr. WILD: Yes. I think the post-mortem pointed to septicæmia, and the only way to account for that was by the condition of the pleura.

FRACTURE OF PYRAMIDAL PROCESS OF PEDAL BONE.

On January 1st my opinion was asked with regard to a bay cart gelding, 7 years old, which was lame on the off fore. I found the sub carpal ligament thickened and tender to pressure. A ringbone was present, not very large, but extending round to the front of the coronet. Being uncertain if the lameness was due to the ligament or ringbone, or both; the leg was blistered from knee to coronet and the animal turned out for six weeks. He came up workably sound. Four days after it shied when out and went very lame, the fetlock joint swelling and showed the usual symptoms of a sprain. It was kept in the stable a week and then again turned out. I heard nothing more of the case for three months, when it was brought up from grass, still very lame, and it was then noticed there was a bulging of the horn over the pyramidal process of the pedal bone, evidently an exostosis. The animal moved on his heels and I had little doubt the exostosis was a large reparative callus arising from a fractured pyramidal process. By this time the owner had had quite enough of the horse and he was bought by the local knacker and soon disappeared. I understood he was sold to a small farmer.

I should like to hear if any members of this Association have met with cases of fracture of the pyramidal process. I have heard of one other case which like this one was not diagnosed. I believe that when the pyramidal process is fractured a large exostosis is formed, which presses on the coronary band and also involves the articular surface, causing an incurable lameness. No doubt the large exostosis is due to the pull of the extensor pedis tendon on the loosened pyramidal process.

Mr. J. A. TODD said he had never had a case of this kind and he had no doubt it would be difficult to diagnose. He should certainly watch for exostosis now.

Mr. F. SPENCER said the only case he had ever had was in Lincolnshire. It was caused by a kick, but the animal was never sound. There was a very large bony enlargement formed. It was a 'bus horse. It afterwards went to plough.

Mr. CAUDWELL suggested that the bone being in a diseased condition the fracture occurred when the horse shied, and Mr. Wild said he was rather of that opinion.

The CHAIRMAN said he had never had a case of fracture of the pyramidal process of the pedal bone, but he proceeded to describe a case of horizontal fracture of the os suffraginis, which he now had under treatment. He had first advised slaughter, but the owner wished to save the mare on account of her foal. So he made a splint of gutta percha and bound it on the leg. From a surgeon's point of view the mare had made a good recovery, but she had exostosis as big as his fist. The case was interesting as showing the reparative power of the bone even in an old animal.

HÆMOGLOBINURIA.

With regard to the two cases of hæmoglobinuria that I should like to bring before your notice, the first case was published in detail so that I shall only give it in outline. The subject was a grey Canadian vanner, aged five years, and was one of the worst cases I have ever seen. She was unable to rise for five days and then for weeks after only kept on her legs for a short time at a stretch. The muscles affected were longissimus dorsi, gluteal, biceps, fessioris and the psoas muscles. She was for some days passing albumen, and the urine gave the characteristic hæmoglobin reaction with tr. guaicum and hyd. peroxide. After the acute symptoms had passed off the wasting of the muscles previously mentioned was remarkable, and I did not expect she would ever be of much use, yet in four months time I saw the mare and she had recovered, the muscles having quite regained the normal, and she trotted and backed without showing any signs of weakness.

The other case was a five year old chestnut cart gelding (Canadian). Owner had had him two weeks, on August 8th she was in extra good spirits and had gone a quarter of a mile when he was suddenly seized with tremors, shaking his head, sweating and evidently in great pain. The driver put it down to sunstroke. With great difficulty he was got home, and he immediately went down, continuously tossing himself about as if in great agony. He was too violent to attempt to sling. My locum gave him large doses of opium and had him well bedded. I returned home on the 10th, two days after the seizure, and found the animal comfortable and free from pain, except when moved, when his quarters seemed to give way and he nearly fell at every step, but managed to save himself each time. On the 12th I obtained some urine and tested it by the Esbach process. It showed between three and four grains of albumen per litre. The urine was strong smelling, but not of the usual stout colour characteristic of this disease, but I was informed it had been very dark the first two or three days of the illness. In this case the muscles affected were the quadriceps, extensor crurens of the off hind, and possibly the psoas muscles. The quadriceps shrank to a remarkable extent so that on September 4th the front of the femur appeared quite subcutaneous, looking like a ledge. When moved this leg collapsed at every step in a most striking manner. Subsequently with gentle exercise there was slight improvement in moving, the animal seemed to manage the leg better, but the muscles still continued wasted. On October 14th he was able to walk by short stages a couple of miles to a good turn out. He was left out nearly four months and then destroyed, be-

ing quite useless, and much in the same state as when first turned out.

In contrasting these two cases you will notice that the first case was apparently a much more severe form of the disease, a larger group of muscles were affected and yet there was complete recovery, which certainly came as a surprise to me and to the owner, as the most we expected was that the mare might be fit for light farm work and perhaps breed a colt. In the second case I expressed the opinion that there was a fair prospect of recovery, and I was very disappointed at the result. It seems that we have no data on which to prognose in this disease. Bad cases may completely recover. Milder cases may render the animal useless.

Mr. J. A. TODD said he had had only one case of hæmoglobinuria, which lasted four days. He found the animal down and kicking about. It was forced into the middle of a three stall stable and one could hardly see her for sweat. She passed urine while he was there and that gave him the cue. He said they must get her out. Across a wide road there was one loose box vacant, the owner of which allowed her to be put there. At great risk they walked her across. She collapsed half way across. They gave her a dose of physic, got the box bedded up, and watched her closely. It was a serious case lasting four days and four nights, but she gradually recovered and did all right.

Mr. WILD: Can you form any opinion as to whether the muscular lesions were separated?

Mr. TODD said he could not. There was a little atrophy certainly.

Mr. WILD: The colour of the urine is no doubt due to the disintegration of the muscular tissue.

Mr. H. L. ROBERTS said his experience was identical with that of Mr. Wild in the cases he had described. Sudden cases with very severe symptoms made remarkable recoveries, while in what they might call sub-acute cases, where they possibly did not find the urine very highly coloured, they got greater atrophy. In one case he had there was a tendency to recur after three weeks. One case in particular occurred three weeks after he was qualified, and at the time when people in London were counting how many corpuscles there were on a given square. (Laughter.) It was a splendid little mare, apparently not very old, and she got on nicely, but her owner, instead of working her quietly drove her home like blazes, and the next morning there was a recurrence of the symptoms in a sub-acute form. The wasting of the lumbar muscles was most pronounced.

In answer to Mr. Caudwell, Mr. Wild said that both the animals he had referred to were Canadians—one recently imported. They were not fed on maize but on ordinary oats. He approved of his locum giving large doses of opium to keep the animal quiet.

Mr. CAUDWELL said that of late years he had seen few cases of this sort, but during his pupilage in Kent he saw several cases in the winter time. Some people said that cold weather and chill had something to do with it. Canadian horses were fed largely on maize, and he had an idea that this, as well as chill, had something to do with it. The colour of the urine was no doubt due to the disintegration of the muscular tissue. He had seen the theory that the disease was caused by poisons manufactured in the bowels, but they were utterly in the dark as to the actual cause. But if they could successfully treat these cases, even without knowing the cause, that was the chief point. He had read that one veterinary surgeon successfully treated these cases with bromide of potassium. He thought it was generally conceded that the best treatment was to clean out the intestinal canal as thoroughly as possible and then pour plenty of alkalies into the system.

Mr. ROBERTS asked what was the opinion as to slinging in these cases.

Mr. CAUDWELL thought it might be useful in milder cases, but in acute cases, when animals fought so much against it, or when paralysed in the hind limbs, he did not think slinging would be advisable. He advocated drawing off the urine two or three times a day, and giving an injection.

Mr. WILD said he thought the pain might be due to renal colic.

The CHAIRMAN suggested that it might be due to a great extent to the effect on the nervous system.

PYÆMIA.

Perhaps the following case might be interesting to some of us. It shows how bad and unexpected results may follow conditions which might almost be said to be trivial at their commencement. On July 20th I was asked to look at a chestnut gelding. I found the animal suffering from a bruised knee, supposed to be caused by striking against the manger. Cooling application to the knee and a dose of physic was recommended. 23rd. Physic had not operated. Leg was now greatly swollen, skin was tense and tender, temperature 104, and it now looked like a case of lymphangitis. Treatment was immediately changed. Hot fomentations, aconite, pot. chlor. 24th. Bowels loose and animal a little griping. Aug. 3rd. Swelling less, appetite improved, skin broke at the back of the knee, leaving a flabby looking ulcer, about the size of a five-shilling piece and discharging a sero-sanguinous fluid. A poultice was applied, and carbolic lotion was used to syringe out the ulcer and iodoform dusted on.

On August 22nd he went down, mucous membranes injected. temp. 105½. Swelling on leg had nearly disappeared; wound was healthy looking. I got him up When he appeared to be griping I gave chloral. August 23d. Temp. 104. Had eaten a little food and passed some dark coloured urine. Showed abdominal pain and lay down with great care, then extended himself out and remained quiet for an hour at a stretch. I was somewhat guarded in my diagnosis, but was suspicious of pyæmia from wound infection, although the knee wound looked healthy. During the next few days the animal became remarkably emaciated, with well marked hectic, and was consequently destroyed. The post mortem showed multiple small abscesses throughout the abdominal glands, liver, kidneys, etc. I have always regretted that I did not use hot water to the knee in the first instance, as from the subsequent history of the case there was evidently deep seated pus which with hot fomentations might have pointed in front of the knee and possibly have been followed by a more favourable result.

Mr. CAUDWELL said he thought Mr. Wild was correct in considering it a case of pyæmia.

In answer to the Chairman, Mr. WILD said the animal had what was thought to be an ordinary bruise. It was in the habit when being fed of scraping a bit and it was thought it had knocked its knee against the manger, but there was no wound.

Mr. CAUDWELL: Yet there might have been a puncture.

Mr. WILD: Yes. It went a long time—nearly a month—before infection took place.

The CHAIRMAN said that whether Mr. Wild was right in blaming himself for not fomenting the leg in the earlier stages was a question. As in other situations in life it often happened that they felt that if they had done differently they might have done better; but it seemed to him that Mr. Wild did what the majority would have done in the circumstances.

VOTE OF THANKS.

In moving a vote of thanks to Mr. Wild for his paper the Chairman said he had attended a good many meetings of this Society, but except when they had some unusual operation performed he thought he had never been at a meeting at which he had been so satisfied with the matters that had been brought before them for discus-

sion as he had been to-day. It seemed to him that Mr. Wild had adopted the best course he could in order to interest and instruct them. These clinical papers, to his way of thinking, were far better than any amount of theoretical ones. A man's experiences, whether they terminated well or ill, were of advantage to the whole profession; but in the majority of cases, when they merely theorised, they went away little better informed than they came. Personally he wished to express his deep appreciation of the material Mr. Wild had brought before them and his sincere thanks to him for coming here and interesting the members in the way he had done.

The HON. SEC. seconded the proposition and it was carried with acclamation.

Mr. WILD thanked the meeting for the kind reception they had given to his paper, and said that if at any future time he could help the Society by bringing forward another paper he should be only too pleased to do so. (Applause).

A vote of thanks to the Chairman, and the members subsequently dined together in the hotel.

VICTORIA VETERINARY BENEVOLENT FUND.

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W. F. BARRETT, Hon. Sec.,
Tressilian Road, Brockley, S.E.

THE TRANSFERENCE OF BOVINE TUBERCULOSIS TO MAN.

Read at the International Conference on Tuberculosis in Berlin.

By ROBERT KOCH, M.D., Director of the Institute of Infectious Diseases in Berlin.

In the following communication I shall keep strictly to the subject appointed for discussion, "the transference of bovine tuberculosis to man," and not follow the example of most of the preceding speakers who have occupied themselves with the reverse question, the transference of human tuberculosis to cattle. It would lead me too far if I debated this question here also, but I reserve to myself the right of entering more fully into it in a short time, when I publish my further investigations on human and cattle tuberculosis.

On the whole I completely agree with what the Chairman has said. I too have been specially struck by the fact that the statistics of primary intestinal tuberculosis collected up to now are somewhat uncertain, and too much affected by contradictions to be turned to good account as evidence to determine the point at issue.

This form of tuberculosis is said to be specially frequent in England, according to the accounts of Woodhead, Still, and Shennan. But English returns are not wanting according to which primary intestinal tuberculosis in this country is said to occur less frequently (according to Carr only five times in 53 tuberculous children under 2) or even very seldom.

In America out of 369 Children in New York 5 (1·4 per cent.) were found with primary intestinal tuberculosis according to Bovaird. In Boston, on the contrary, according to Councilman, there were 37·1 per cent.

In Germany, as far as I have been able to find statements on the subject in literature, and as far as my personal inquiries have reached, all authors have expressed the opinion that primary intestinal tuberculosis is with us a very rare occurrence. The only exception to this is at Kiel, where Heller has found 37·8 per cent. of primary intestinal tuberculosis at necropsies of tuberculous children.

I can attribute the following facts to the critical examination of these circumstances. A year and a quarter ago the Board of Education issued invitations at my request to the heads of the university clinics in Prussia to render accessible to me such cases of primary intestinal tuberculosis as have incurred the disease ostensibly through the use of the milk of cows suffering from *Perlsucht*. The same invitation was issued eight months ago to the directors of the Institute of Pathological Anatomy of the Prussian Universities with regard to cases of primary tuberculosis of the intestines, the mesenteric glands, and the peritoneum, so far as the onset of the illness might be traced to the use of food affected with perlsucht, from the histories of the disease or special facts ascertained. Herr Heller in Kiel received a special invitation of this kind.

But up to the present time neither from the hospitals nor from the institutes of pathological anatomy has one single report reached me, so that I must, I think, conclude that at the Prussian Universities no case of primary intestinal tuberculosis has, within this period, come under observation which can be referred to the use of food affected with perlsucht. Still, before this decree Virchow placed at my disposal a case of primary intestinal tuberculosis, in reference to which he expressly noted that cases of the kind did not often occur —perhaps three or four times a year—at his institute. Perchance this is the same case—as I note, by the way—which Herr M. Wolff has reported on in the course of the discussion. He stated that he had produced perlsucht in a cow with tuberculous material which he had obtained from it. In my investigation of this case I have arrived at an exactly opposite result, for the pure culture of tubercle bacilli obtained from it showed itself quite non-virulent for cattle. I cannot enter here on the reasons why Herr M. Wolff and I arrived at such contradictory results. I must reserve the discussion of these for another occasion.

Less full of contradictions are the assertions concerning observations of skin infection in veterinary surgeons, butchers and slaughterhouse employés related by the Chairman. There already existed a fair number of communications as to occurrences of the kind. I have myself had many opportunities of examining such cases.

They all have this in common, that after a wound on the hands or arms which has occurred while cutting up an animal affected with perlsucht, wart like formations —the so-called tuberculosis verrucosa cutis—develop. If the wound extends to a tendon it may in rare cases become a tuberculous inflammation of the tendon sheath. In isolated cases the process seems to have attacked the nearest lymphatic glands as well, but to a very slight extent. In the remaining cases the disease remains localised, does not lead to a tuberculosis of internal organs, and runs its course as an insignificant skin malady which often gets well of itself as slaughterhouse employés have assured me.

Up till now it has only in one case ever been held to lead to a general infection. This is the case recorded by Pfeiffer of a veterinary surgeon in whom tuberculosis of the lungs developed fifteen months after a wound of the finger, leading to death in the following eighteen months.

At the necropsy, however, the axillary glands proved to be free from tuberculosis, and we must conclude from this that no connection existed between the wound of the finger and the tuberculous infiltration of the lungs. The question was only one of a casual coincidence between the Perlsucht infection—if it existed at all, and even this is not proved—which remained local, and an infection of the lungs from another quarter. Bearing in mind the extraordinary frequency of primary tuberculosis of the lungs, a coincidence such as this with tuberculosis verrucosa cutis must occur incidentally now and then.

A new case of the same kind almost insinuated itself into the literature of the subject a short time ago. A veterinary surgeon in Berlin is said to have injured his index finger at the necropsy of a cow infected with perlsucht, to have become phthisical in consequence of this, and to have died of hæmoptysis. Inquiries instituted at once elicited that the man in question came of a tuberculous family, and before wounding his finger showed undoubted signs of tuberculosis of the lungs.

Again, a case communicated by Hartzell cannot even stand the mildest criticism. A labourer had received a wound on the back of his hand while repairing a cattle truck. Warts subsequently developed, and he died a year later of tuberculosis of the lungs. Every proof of connection between the two affections is wanting here. It is not even stated whether a necropsy was made. Still more insufficient is the statement contained in the same work by Ravenel that the death of Mr. W., of the Royal Veterinary College of Edinburgh, was attributed to an infection which he contracted at the necropsy of a cow infected with perlsucht.

With the best will in the world there is no doing anything with such defective information towards clearing up the question considered here. It is better to leave it on one side and look out for really conclusive observations.

Baumgarten's communication concerning the cancer patients inoculated at Königsberg with virulent perlsucht bacilli, I consider, on the contrary, very important. It is a question of an experiment under trustworthy observation in all its bearings and throughout its whole course; and since it is recognised as proved that no antagonism exists between cancer and tubercle, the negative result of this investigation only points to the fact that the perlsucht culture in question possessed no virulence for man in subcutaneous injections.

In all investigations which aim at solving the question of the transference of bovine tuberculosis to man through statistics of primary intestinal tuberculosis and observations on skin infection in man, we must be clear that the evidence with which we have to deal is always indirect. For of the cases on which statistics are based we know that in the most favourable event they are genuine cases of primary intestinal tuberculosis, but not whether they really depend on perlsucht infection, and not far more on human tuberculosis, with which, on account of its extraordinary frequency, we have to reckon in every single case.

Even the occurrence of a perlsucht infection, which remains local, as a result of a skin wound, does not in any way prove that perlsucht bacilli are also in a position to infect the uninjured intestinal mucous membrane, or if they are able to pass through it without leaving any traces behind; that they render the mesenteric glands tuberculous, and from thence bring about a general infection of the body with its well known and justly feared consequences.

On the other hand, we cannot but expect that if tuberculous infection through partaking of meat and milk infected with perlsucht really occurs as frequently as is asserted, direct observation must make this obvious.

This side of the question has, in my opinion, been much too little regarded up to the present, and it is very necessary that we should turn our attention once again in this direction. Analogous considerations are not wanting in this connection. There are several other infectious diseases which are conveyed to man by feeding on meat and milk, and their behaviour may be very instructive to us in relation to tuberculosis.

I recollect in this connection the so-called cases of meat poisoning which have been largely caused by a typhoid-like bacillus, and also the illnesses resulting from the use of the flesh of animals which had suffered from splenic fever. Milk, too, may contain typhoid bacilli, as has been so frequently observed in recent times, and these give rise to an outbreak of enteric.

It is extraordinarily characteristic of all these outbreaks that they do not occur as isolated illnesses, but in groups and often in epidemics. This could scarcely be otherwise, for the milk of a cow, the flesh of a sick animal is practically always partaken of by several, and often by a great many people at the same time, who will be infected and fall ill, certainly not as a whole, but on a larger or smaller percentage.

Not only is attention directed to the infection which has taken place, and to its common cause, by the number of cases of illness of the same kind, but incontestable evidence arises thus that the food in question must have contained the infectious material. Under such conditions no statistics and no experiments on animals are required; the observation itself yields us direct proof of the occurrence of the illness from the use of infected food.

A tuberculous infection must also take shape in the same way if tubercle bacilli which are virulent for man are found in meat or milk. Here, too, a certain percentage of people who have taken the infected food must fall ill, and a group of illnesses must occur.

Of course the circumstances will differ to some extent in the case of tubercle and that of typhoid; for, owing to the much longer incubation period of tuberculosis, the illnesses will not arise so soon after infection or be comprised within so short a space of time. But, on the other hand, tuberculous infection is favoured by the fact that the ingestion of tubercle bacilli is repeated many times, and extended over a long period among those people who are given to the use of food infected with perlsucht, so that the probability of the outbreak of infection must be essentially raised.

Everything, then, combines to show that tubercle also—if as a fact it can be produced by the flesh and milk of animals suffering from perlsucht—must occur in groups, and it is only a question whether this has not for a long time been observed and described.

Let us next examine the literature of the subject for communication concerning illnesses following the ingestion of meat infected with Perlsucht.

But I should like to draw attention beforehand to the fact that probably not only meat free from tubercle and certainly boiled or well roasted, is eaten as is usually supposed. On the contrary, an expert on meat inspection, Ostertag, says of this: "Day by day an uncounted number of tuberculous organs come into the market and are consumed." They are mostly made into sausages. Only a short time ago I had to express an opinion as an expert witness in legal proceedings about a case in which meat, infested with Perlsucht, which had been delivered without his knowledge at the business house of a court meat purveyor, was only by chance prevented from being made into sausages. Although, then, no doubt can exist that a short time ago, from deficient meat inspection, much meat infected with Perlsucht reached the market and was often enough eaten, yet in the whole literature of the subject not a single observation of groups of illness or epidemics, in consequence of the ingestion of meat infested with Perlsucht can be found.

But still more, not even once is an isolated case of illness described, and reports on damage to health from meat infected with Perlsucht are equally wanting.

On the contrary, facts are recorded by several authors which prove the opposite According to Bollinger, a collective investigation instituted by the order of the Bavarian Government yielded a number of isolated observations which speak for the harmlessness of the flesh of tuberculous animals. Many families, even whole villages, were found which consumed tuberculous meat as a matter of course without tuberculosis occuring more frequently among them than elsewhere. Göring and Schottelius have had quite similar experiences.

In consequence of this a very lenient opinion prevails with regard to the danger of meat infected by Perlsucht. At the Congress on Tuberculosis in Paris in 1885 and 1891 the complete exclusion of the flesh of tuberculous animals as a class was decided on. But at the Congresses of 1893 and 1898 a more rational opinion was arrived at, and the sale of the flesh of animals in which tuberculosis was only local was considered permissible. At the Seventh International Congress on Hygiene in London the complete exclusion of tuberculous meat was unanimously set aside. Ostertag, an energetic champion of the identity of bovine and human tuberculosis, says, in his handbook of meat inspection (1899): "In face of rare occurrence of primary intestinal tuberculosis in man and the wide dissemination of bovine tuberculosis, only a very slight risk to the health of mankind can be empirically attributed to the flesh of these animals."

From all this we gather that proof of the danger of meat infected with Perlsucht is completely wanting; it is, as the Ministerial decree expresses it "not proven."

But no one will contest that the Perlsucht bacilli in meat are identical with those occurring in milk, and an insoluble contradiction exists in the fact that far stricter views have prevailed recently against the milk of tuberculous beasts than against tuberculous meat.

Now, how goes it with regard to the direct proof of the danger of the milk of animals suffering from perlsucht? Perlsucht bacilli contained in milk also come into the market to a considerable extent, and are taken in a living condition much more frequently than is usually accepted. Next, it should be observed that 1 to 2 per cent. of all milch cows suffer from tuberculosis of the udder, and without exception yield milk containing more or fewer bacilli. But tuberculosis of the udder is not of such a character that it can be recognised as such from its earliest onset. If one watches the disease and allows a tolerably certain diagnosis to become possible, it will have existed for weeks and even months, and all this time the milk with its perlsucht bacilli will have been drunk. Such milk will scarcely ever be used by a single individual. As a rule it will be mixed with the milk of several other animals from the same byre and be ingested by a still larger number of people. If the milk reaches a central dairy it may be divided amongst hundreds of consumers.

Now, people usually rely on the fact that perlsucht bacilli are killed by boiling the milk, but in this respect they make a great mistake. To be sure, if in a laboratory experiment milk is brought to boiling point, all the perlsucht bacilli are destroyed. But in the household method of boiling milk they remain alive. Professor Beck has, at my instigation, instituted numerous and important investigations on this point at the Institute for Infectious Diseases, and has found that tubercle bacilli are not killed by a single, short boiling up of milk in wide-mouthed vessels—the treatment milk usually receives in a household. To attain this object, uniform boiling for several minutes is necessary, and this the housewife will not condescend to do because the milk easily boils over or gets burnt. If, therefore, any one asserts that he imbibes no living perlsucht bacilli because he only drinks boiled milk he has still to produce evidence that the milk taken by him is always kept boiling for several minutes.

One other point I might draw attention to, one which almost always remains unnoticed in discussions on milk infected with perlsucht. We are not only concerned with the milk, but also with the products which are made from it, especially with butter, which evidently very frequently contains living perlsucht bacilli. It has frequently happened to me that persons who vehemently protest that they have only used boiled milk for years because of the danger of perlsucht, when asked what they did about the butter, confessed that it had never entered their heads, that in the natural order of things this should be sterilized too.

Under such circumstances I believe I am justified in asserting that certainly almost every one in the course of his life has more or less often, and in considerable numbers, ingested living perlsucht bacilli. If perlsucht bacilli are really dangerous to man we might logically expect that instances have been very frequently observed and described of injury to health which have been unquestionably caused by milk infected with perlsucht. I have looked at the literature bearing on the subject, and believe I can assert that nothing essential has escaped me. Instead of the countless cases on which we ought to reckon I have been able to find among them all only two groups of illnesses and 28 isolated cases of illness, and we must, moreover, consider whether as pieces of evidence they are really free from objection.

Thus the next thing to discuss is the celebrated and constantly quoted case of Ollivier which he communicated to the Académie de Médecine on February 24th, 1891. In a girls' school in the course of a few years 13 pupils sickened with tuberculosis, 6 of whom died. In several cases the intestinal canal seemed the starting point. When the cause was sought it appeared that a cow which had been kept for some years in the establishment of the school suffered from tuberculosis of the udder, and that the milk had been drunk by the boarders. This indeed looked just as if a group of illnesses had occurred in consequence of the use of milk infected with Perlsucht, and that here a case of Perlsucht infection was found which was free from objection. Ollivier was of this opinion, and so have been all those who up to the present time have turned this case to good account as a classical example of infection through milk containing Perlsucht bacilli. Yet the case is by no means so free from objection as has been maintained, for, apart from the consideration that apparently only one necropsy was made, and that the diagnosis of alleged intestinal tuberculosis is somewhat uncertain, people have contented themselves with excluding heredity as a cause from another quarter which comes under consideration. A direct infection from one person to another has not been publicly brought under consideration at all, and yet the course of this little epidemic of tuberculosis would have been exactly the same if one of the boarders or a pupil had suffered from tuberculosis of the lungs, and infected a number of her companions through the sputum. Something of the kind has often occurred, and its possibility would have to be considered among all the circumstances. But, even apart from this consideration, the alleged classical case vanishes away, and even proves the reverse, as the result of a second communication by Ollivier, which he found himself obliged to make at the next session of the Academy, in consequence of better information. He actually had to declare that he was mistaken; that the milk from the cow in question was not drunk by the boarders, but by the teaching staff and the domestic servants of the establishment. Among those persons who had regularly partaken of the suspected milk not a single case of tuberculosis had occurred.

I come now to the second example of a group of illnesses. This was published by Huls in the *Münchener Medizinische Wochenschrift* a few months ago. In a miller's family of nine persons who are alleged to have fed for years on the milk, butter, and meat of tuberculous animals, and in other respects are said to have had no opportunity of infection, seven members died of consumption. In this case we need only pay attention to the succession of the fatal cases to see at once that the connection is quite different from the one accepted by Huls. First the mother sickened but recovered again after some months. In the following year the youngest child sickened and died. In the same year a son, aged 18 years, became ill and died. A year later followed a son, aged 23 years. In the next year the mother got ill again and died; then followed a girl of 16, then the father, and, lastly, a third son. That, among the relations of the illness to the family here indicated, contiguity, the dwelling together of the sick and healthy, and so the transference from one to another should be excluded, is to me incredible. Every expert in infectious diseases will be convinced without any further evidence that there was in this case a continuous chain of contact infections and not a group of illnesses arising from infected food. In order to be able to accept the last as the origin the illnesses must have ensued in the course of six months or a year at least; they could not, as was the case here, be protracted over a series of years. So this case of a group of illnesses also comes to nothing, and there only remains the 28 cases of isolated illnesses.

These do not merit any great confidence in and for themselves. Should we allow a single typhoid case, in which the use of suspected milk could be proved, to pass without further investigation? We certainly should not. Notwithstanding, I neither can nor will contest the possibility that single cases may occur. But in order to be convincing they must fulfil certain conditions. These conditions are as follows:—

(1) Certain proof of tubercle in general, and, where possible the primary focus must be supplied In adults we must, therefore, require the existence of unassailable clinical symptoms, and a necropsy when these are not present. In children the clinical symptoms are much too uncertain, and so a necropsy is always requisite with them.

(2) Other sources of infection must be excluded with certainty. The assurance that the person in question comes of a healthy family is under no circumstances sufficient. There are numerous other possibilities of infection either inside or outside the family which come up for consideration. In this connection I can only agree with the Chairman who has drawn attention to the researches of Preisich and Schutz, and of Dieudonné on the occurrence of tubercle bacilli round the nails of children, and thus to a source of infection in children well worthy of heed.

(3) In each case of alleged infection from milk affected with Perlsucht the condition of the rest of the people who have taken the same milk should be borne in mind. These fellow consumers form to a certain extent a control experiment, and if of the numerous people who have drunk the suspected milk only a single one sickens, this weighs decidedly against the belief that this one person was infected by the common food. With enteric, too, if only one of all the people who had drunk the same milk contracted typhoid, we should on this ground alone immediately relinquish the suspicion that it could depend on a milk infection.

(4) The source of the milk should be attended to. Since in recent years it has become more and more evident that milk containing tubercle bacilli is yielded only by such cows as suffer from tuberculosis of the udders, the general statement that some one has drunk milk from a cow suffering Perlsucht no longer suffices to prove to us that Perlsucht bacilli have really reached his digestive organs. A man can certainly ingest milk from a cow suffering from Perlsucht without coming into contact with Perlsucht bacilli through it. It must be milk from a cow with tuberculosis of the udder, and therefore a statement on this subject should not be wanting in a report on milk infection if it is said to be complete.

If I now examine in this way the 28 single cases I have collected from literature and see how far they correspond to the conditions just laid down, I come to the following results:—

(1) In only 10 cases is it stated that a necropsy took place, and only 7 of these are said to have had intestinal tuberculosis.

(2) Only in 3 cases is it asserted that the milk came from a cow with tuberculous udder.

(3) In not a single one are other possibilities of infection excluded with certainty. As a rule only absence of heredity is alleged, though we know that just this plays a very subordinate part if any.

(4) In no case is anything stated about the condition of other people concerned.

The insufficiency of these data has not even entirely escaped those who use them. Thus Ravenel says: "The number of cases in which infection can be traced back to the use of tuberculous milk is not great (it would be more correct to say, 'is, contrary to the expectation, small'), and almost all are open to the objection that all other sources of infection cannot be completely excluded." And in the report of a Committee of the American Public Health Association, which is distinguished in other respects by the observance of a strikingly biassed point of view, it is confessed that we cannot tell from the recorded cases whether the illness was caused by the Perlsucht bacillus. But in spite of this confession, the collected cases are treated as if they were incontrovertibly proved.

It therefore appears to me necessary to mention shortly some of these cases, and particularly those among them which are regarded as quite certain and have attained thus to a degree of celebrity.

I begin with the case of Gosse which Nocard has recorded. Dr. Gosse, a Genevan doctor, regularly resorted with his family to a farm on Sundays, where his granddaughter, 17 years old, drank by preference milk straight from the cow. The young girl sickened, and after a long illness died of intestinal tuberculosis as the necropsy showed. On this an investigation was set on foot, which showed that of the five cows on the farm four were tuberculous and two of the latter actually suffered from tuberculosis of the udder. This fact was considered sufficient to base on it the assertion that the illness and death of the young girl must have been caused by milk infected with Perlsucht. The possibility of infection arising in any other way is nowhere discussed, and yet during her permanent residence in town she must undoubtedly have had sufficient opportunity of being infected from some other quarter. We must further ask, what became of those people who drank the rest of the milk which came from the farm. The inhabitants of the farm had undoubtedly done so. Have any of them become ill? Had this been the case we should have been made acquainted with it at once. As this has not happened we must consider that no one else became ill, and we are further urged to the logical conclusion that the milk in question was not injurious to health, and cannot be blamed for the illness of Dr. Gosse's granddaughter. Nocard, who introduced the case into the literature of perlsucht, was of the opinion that it had almost the value of an experiment. I do not believe that this distinguished expert in tuberculosis, who knows quite well with how many precautions and how carefully experiments on tuberculosis must be carried on, in order to satisfy our present day scientific demands, would stil

maintain the opinion. Still less sound than the case just mentioned is the one which Dr. Stang observed in Amorbach. This is described by Bollinger. A five year old boy suffered from dropsy and died with the symptoms of consumption. At the necropsy, tuberculosis of the lymphatic glands of the abdomen and of the serous membranes and lungs was found. With regard to the etiology of the case, it was elicited that no tubercle had occurred in the family for two generations, and that the boy for a year had drunk the milk of a cow affected with perlsucht. This case too, Bollinger says, may be compared to an experiment, but besides the same critical considerations which had to be raised against the preceding case, there is this in addition, that we cannot ascertain whether the cow suffered from tuberculosis of the udder. Furthermore, the boy had tuberculosis of the lungs, as well as of the mesenteric glands and peritoneum, and it would have to be fairly established that this was not the primary lesion as is so frequently the case.

In the often quoted case contributed by Johne, we only learn that a child, 2½ years old, whose state of nutrition had been enfeebled by measles and bronchial catarrh, died of miliary tuberculosis of the brain. He had been fed with milk from a cow infected with perlsucht. Whether a necropsy was made, whether other possibilities of infection were excluded, whether the cow suffered from tuberculosis of the udder, whether other people who had drunk the same milk had sickened, is not stated.

According to Uffelmann a child died, after partaking of the unboiled milk of a sick cow, of tubercles which developed in the subcutaneous tissues. Neither in the case of the child nor the cow was a necropsy made. Uffelmann himself assigns no evidential value to this case, yet in spite of this it is regularly brought forward in literature when the point at issue is to prove the danger of the milk of cows suffering from perlsucht from cases occurring in practice.

Some reporters have even said that children while they took milk from a cow suffering from perlsucht were sickly, suffered from eruptions and coughed, but soon recovered again if the milk from healthy cows was given to them. Such cases naturally prove just the opposite from what they are meant to prove, namely, that milk infected with perlsucht was drunk by children for a long time without their becoming tuberculous.

The rest of the cases are like those just enumerated.

We come then to the conclusion that not one single observation free from objection can be cited of the injurious influence of milk infected with perlsucht any more than for the harmfulness of meat affected in the same way, though numerous people continually expose themselves to the supposed danger.

But for milk infected with perlsucht, as with meat, there exist observations of the fact that people have for a long time drunk it with no ill results. To be sure, the statements on this point are not numerous, evidently because it was much more interesting to look for infection, while none bothered themselves about the absence of infection

Yet it would be easy in a short time to collect serviceable material. In the country where relations are clear it would only be necessary to have cases of genuine udder tuberculosis, and to ascertain how long the illness had existed in the animals; what people, especially children, had partaken of the milk and the butter made from it; whether, and how, the milk was boiled; and whether the persons concerned had fallen ill of tuberculosis in the course of one to two years; and, of course, the form which it took.

1. Cases of alleged infection from ingesting milk infected with perlsucht, having regard to the conditions advanced by me (necropsy, exclusion of other sources of infection, condition of other people who have drunk the same milk, proof of tuberculous udders).

2. Cases of absence of infection after partaking of milk infected with perlsucht, likewise under the control of the required conditions (proof of udder tuberculosis, sufficiently long observation of the people, statement as to whether and how the milk was boiled).

Provisionally we can only say that the injurious effects of milk infected with perlsucht and its products are not proven. What these facts signify in relation to the immensely frequent opportunities of infection, I leave to the individual judgement.

Obviously this opinion only holds good in the case of mankind. It it a matter for agriculture and veterinary science to determine how far milk infected with perlsucht is detrimental to cattle, and what measures should be taken to combat the danger which perhaps exists. Measures concerning meat and milk infected with perlsucht which are meant to combat human tuberculosis cannot be well founded at the present time. Further, such measures would be very costly, because of the compensation which would have to be paid for animals judicially seized, and on account of the immense quantity of milk which would have to be inspected. It is, however, decidedly more fitting not to lay out a sum of this kind for something which is far from being established, but to apply it rather to such measures as must with certainty lead to a decline of human tuberculosis.

In this connection I can only repeat what I said in my London address: The fight with tuberculosis must not be fought on wrong lines if it is to have a real result. It must aim at shutting off the chief, indeed we may say almost the only, source of infection. This is those consumptives who in consequence of the unfavourable conditions under which they live, or because they obstinately set aside the simplest rules for the prevention of infection, are a danger to their companions. In some way or other we must look after these sick people, either by procuring for them more favourable conditions, for example, as regards dwelling places, or by so sheltering them in suitable institutions that they cease to be a danger to their neighbours.

After the experience we have had of other infectious diseases, we must come to the conclusion that in no other way can anything be attained, and therefore I should like urgently to advise that for the future this task should be kept to the fore in the battle against tuberculosis until it has been accomplished.—*B.M.J.*

Royal College of Veterinary Surgeons.

EXAMINATIONS IN SCOTLAND.

At meetings of the Board of Examiners held in Edinburgh and Glasgow on December 12th for the Written, and on and between December 17th and 20th for the Oral examinations, the following gentlemen passed their Final Examination and became Members of the Royal College of Veterinary Surgeons:—

NEW COLLEGE.

Mr. C. H. Harrison	Mr. J. A. Shaw
L. W. Lloyd *	T. Walker
A. B. Mattinson	A. Walker
A. Macfarlane	R. Elliott
G. H. Nicholson	J. W. Bee

DICK COLLEGE.

Mr. R. U. Lewis	Mr. J. W. D. Serjeant
W. Robertson	J. D. Whitty

GLASGOW COLLEGE.

Mr. J. Crook	Mr. J. Wallace
J. McFarlane	F. Timiny

DUBLIN COLLEGE.

Mr. S. Craig.

The following passed their Third Examination :—

DICK COLLEGE.

Mr. G. W. Davidson	Mr. J. Henderson
A. J. Horner	J. O. Powley

GLASGOW COLLEGE.

Mr. H. McIntyre	Mr. W. Gardner
K. McKenzie	R. Bickerton
J. Tait	

DUBLIN COLLEGE.

Mr. W. J. B. Devine	M. J. Herriott

The following passed their Second Examination :

DICK COLLEGE.

Mr. J. McClure Barry	Mr. O. Hatch
F. Drinkwater	A. E. Massey *
J. R. Hayhurst	W. F. McConnell

NEW COLLEGE.

Mr. C. Elphick	Mr. G. H. Petch

Mr. W. G. Darling.

DUBLIN COLLEGE.

Mr. R. H. Meade	Mr. M. P. Walsh

The following passed their First Examination :

DICK COLLEGE.

Mr. T. N. Critchley	Mr. L. L. Steele
J. A. Gault	J. W. Sugden
C. L. O'Gorman	W. J. Young *
G. W. Rutherford	

NEW COLLEGE.

Mr. G. C. Cochrane *	Mr. J. G. Runciman
W. Walker *	R. G. Wood

GLASGOW COLLEGE.

Mr. J. Lawther *	Mr. P. McIntyre

Marked thus * passed with 2nd class honours.

R. RUTHERFORD, F.R.C.V.S.,
Sec., Board of Examiners.

OBITUARY.

R. O. STAFFORD, M.R.C.V.S., Mill Street, Crewe.
Graduated, Glas : 1887.

Mr. Stafford died very suddenly on Friday night, Dec. 26th, and the news of his death created a great shock over this part of Cheshire. It appeared that Mr. Stafford had been ailing for some time, though he was out as recently as the day preceding his death. Some time ago he met with a serious accident, having been thrown out of his trap while returning late at night from a country engagement, and in addition to an injury to his head, he suffered from severe shock, which must have lowered his vitality. Inflammation of the lungs with severe chest complications set in recently, and he passed away on Friday evening at the comparatively early age of about 40. Mr. Stafford was a Scotchman, and came to Crewe some 14 years ago, and worked up a practice for himself, He had rather an extensive practice, was district inspector to the county council under the Contagious Diseases Animals Act, and held positions also under the Crewe Corporation and at the Cattle Market.—*Chester Chronicle.*

EDMUND NUTTALL, M.R.C.V.S., Preston, Lancs.
Graduated, Edin : 1863.

Mr. Nuttall was born at Bury, but came to Preston about 40 years ago, where he served his apprenticeship, and afterwards built up a large practice, which he recently disposed of to Mr. Duncan Macgregor, retiring to Oxford Road, Anedell. His son who was to have succeeded him, showed consumptive tendencies, and went to New Zealand for the benefit of his health. He returned about four months ago and began to sink, dying on the eve of Christmas. Yesterday (Dec. 26) returning from the crematorium in Manchester, and whilst walking with another son towards Victoria Station, Mr. Nuttall sank to the ground and expired almost immediately. He had suffered from heart disease, and his medical adviser said he was not surprised to hear of his death. He was 65 years of age. He was of a genial temperament, and very highly respected. He leaves a widow, a son, and a married daughter, his deceased son leaving a widow and a child two years old.—*The Lancashire Daily Post.*

CORRESPONDENCE.

ANTI-DISTEMPER VACCINE.

Sir,

As you have decided to arrange a small commission or committee to investigate Dr. Phisalix's anti-distemper vaccine—and I sincerely trust it will not be impossible to find English veterinary surgeons capable of doing such work—further discussion on the subject should, I think, be postponed for the present.—Yours faithfully,

A. J. SEWELL.

Dec. 23rd, 1902.

"ROARING."—ACTION AGAINST A M.R.C.V.S.

Sir,

Will Mr. Pollock kindly state how he tested the horse in question in this action. What was the "imperfection of wind" that he heard to make him come to the conclusion that this was a case of *long standing*? Why of long standing?

For the benefit of the veterinary profession it would be of great scientific interest if Mr. Pollock would clearly explain how he differentiates between cases of recent roaring, moderately long standing cases, and long standing cases.

I simply ask these questions for the benefit of my professional brethren who have not had so much experience in the matter of "roaring" as Mr. Pollock appears to have had.

JOHN MCLEAN, M.R.C.V.S.

Norwich.

UNQUALIFIED ARMY VETERINARY SURGEON.

Sir,

In your *Record* of 18th Oct. 1902, I read a letter from "Right is Might." Now, being a graduate of the same University as Mr. J. P. Spanton, and at the same time knowing him well, I must say that his ("Right is Might") scandalous remarks are uncalled for, also very unbecoming of a gentleman. He must remember that McGill University, Montreal, Canada, of which Mr. Spanton is a graduate, has held its own amongst the foremost of Universities throughout the world, also that the graduates of the Veterinary Faculty of that University who have served through this war, have done their work well.

As for the experience gained in this country, we have all learnt something, and we still have more to learn.

"Right is Might" must not forget to take into consideration his own side. I think that if he had done so he would not have written such as he did. As for Mr. J. P. Spanton's honorary rank, I think he meritoriously earnt it, and that he is a credit to the University from which he graduated.

—Yours truly,

McGILL.

Nov. 22nd, 1902.